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A Psychometric Comparison of the Toronto Alexithymia Scale (TAS-20) and the Observer Alexithymia Scale (OAS) in an Alcohol Dependent Sample

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Abstract

Alexithymia is characterised by deficits in emotional insight and self reflection, that impact on the efficacy of psychological treatments. Given the high prevalence of alexithymia in Alcohol Use Disorders, valid assessment tools are critical. The majority of research on the relationship between alexithymia and alcohol-dependence has employed the self-administered Toronto Alexithymia Scale (TAS-20). The Observer Alexithymia Scale (OAS) has also been recommended. The aim of the present study was to assess the validity and reliability of the OAS and the TAS-20 in an alcohol-dependent sample. Two hundred and ten alcohol-dependent participants in an outpatient Cognitive Behavioral Treatment program were administered the TAS-20 at assessment and upon treatment completion at 12 weeks. Clinical psychologists provided observer assessment data for a subsample of 159 patients. The findings confirmed acceptable internal consistency, test-retest reliability and scale homogeneity for both the OAS and TAS-20, except for the low internal consistency of the TAS-20 EOT scale. The TAS-20 was more strongly associated with alcohol problems than the OAS.

Keywords: Alexithymia; Toronto alexithymia scale; Observer alexithymia scale; psychometric properties; Alcohol-dependence.

1. Introduction

Alexithymia is a multifaceted personality trait comprising difficulties identifying and describing feelings, a lack of imagination and an externally oriented thinking style (Sifneos, 1973). Alexithymia is associated with various forms of psychosomatic illness (Porcelli et al., 2004; Gawin, Glaros, & Lumley, 2005) as well as psychological disorders, and evidence suggests strong associations with post traumatic stress disorder, eating disorders and substance use disorders (De Berardis et al., 2007; Frewen et al., 2008; Thorberg, Young, Sullivan, & Lyvers, 2009).

Previous research has found positive significant correlations between alexithymia and alcohol measures (Thorberg et al., 2009). These data assume sound construct measurement, although there have been relatively few studies examining different approaches to alexithymia assessment. The most extensively used self-report measure of alexithymia in alcohol studies is the Toronto Alexithymia Scale (TAS) (Thorberg et al., 2009), which has undergone three revisions. The current version, the TAS-20, yields an overall alexithymia score as well as subscale scores for difficulties identifying feelings (DIF), difficulties describing feelings (DDF) and externally oriented thinking (EOT). There is mixed support for the validity and reliability of the TAS-20 in psychiatric samples (Kooiman, Spinhoven, & Trijsburg, 2002; Mueller, Buehner, & Ellgring, 2003) and few psychometric studies have been undertaken in subjects with addiction (Besharat, 2008; Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Dorard et al., 2008; Loas et al., 2001). To date, Besharat (2008), Cleland et al. (2005) and Thorberg et al. (in press) have investigated the factorial validity of the TAS-20 undertaking Confirmatory Factor Analysis (CFA) in those with alcohol and/or drug problems and have yielded mixed support for the three-factor model.

Cleland and colleagues (2005) undertook CFAs based on a previously published two-factor model (Erni, Lotscher, & Modestin, 1997) and the original three-factor model. However, both models met only two of five "goodness of fit" criteria. Exploratory factor analysis indicated that a three-factor model was a better fit then the two-factor model, yet the authors favoured the two- factor model due to a simpler factor structure (Cleland et al., 2005). Similarly, a recent study (Thorberg et al., in press) in an alcohol dependent sample investigated the factorial validity of the TAS-20 and examined several models. Although the three- factor model provided a better fit across four out of five fit indices compared to the one and two-factor models, the CFI did not reach the recommended 0.90 cut-off and all models were rejected given their poor fit to the data (Thorberg et al., in press). By contrast, Besharat (2008) confirmed the original three-factor model in a sample of 321 substance abusing patients and found acceptable internal consistency as well as test-retest reliability over a 2-week period. However despite the acceptable fit it was noted that the validity and reliability of the TAS-20 could be improved (Besharat, 2008).

Another key measure of alexithymia is the Observer Alexithymia Scale (OAS) (Haviland, Warren, Riggs, & Gallacher, 2001). Alexithymic individuals are represented as constricted, rigid and anxious with difficulties experiencing and expressing emotion, as well as lacking a fantasy life, emotional insight and humour. The OAS yields an overall alexithymia score as well as five distinct dimensions; Distant (DIS), Uninsightful (UNS), Somatizing (SOM), Humorless (HUM) and Rigid (RI). The psychometric properties of the OAS have previously been investigated in two studies with mixed psychiatric groups. The OAS displayed acceptable internal consistency for the overall OAS as well as its subscales. A CFA was undertaken and

the Comparative Fit Index indicated an adequate model fit (Haviland et al., 2001; 2002).

A study in 75 eating disorder patients (Berthoz, Perdereau, Godart, Corcos, & Haviland, 2007) indicated that the OAS had acceptable discriminant validity and inter-rater reliability. The total OAS score was significantly correlated with total TAS-20 score indicating a moderate level of correspondence between these measures. Dorard et al. (2008) investigated observer and self-report alexithymia in a sample of 87 cannabis dependent adolescents and young adults, and found adequate internal consistency for the total OAS (though not for the RI and UNS subscales) as well as adequate inter-rater reliability for the overall OAS. Acceptable convergent and discriminant validity were evident.

As there are self-report and observer measures of alexithymia assessment, the focus of this paper was to compare one measure of each type the TAS-20 and the OAS. Alcohol-dependent individuals exposed to debilitating neurotoxic effects of alcohol may have impaired cognitive flexibility (Bonthius, Bonthiu, Li, & Karacay, 2008; Butler, Smith, Self, Braden, & Prendergast, 2008) reducing the validity of data. Accordingly, evidence has indicated persistent metabolic deficits in the anterior cingulate and orbitofrontal cortex in abstinent alcoholics when assessed 6-8 weeks after detoxification (Gatley & Volkow, 1998) and alcohol-dependence is often related to signs of frontal lobes dysfunction (see Lyvers, 2000). Given the lack of research on the psychometric properties of the TAS-20 and the OAS in alcohol-dependent samples the first aim of the present study was to establish the correspondence between the TAS-20 and OAS to assess construct validity. Second, the study evaluated the internal consistency of the TAS-20 and OAS and examined their relationship with alcohol problems.

2. Method

2.1. Participants

Two hundred and ten alcohol-dependent subjects (144 males and 66 females) enrolled in a voluntary individual outpatient Cognitive-Behavioural Therapy (CBT) treatment program for alcohol dependence at a hospital in Australia were recruited. All participants completed the self-report measures. 67.6 % drank daily, 17.1% were binge drinkers and 15.3% drank at least twice a week. In terms of other lifetime substance use 20.9% reported cannabis use, 15.3% amphetamine, 8.7% ecstasy, 5.2% heroin, 3.8% benzodiazepines and 2.4% morphine. Subject relationship status: 40.3% were in a de facto relationship or married, 37 % had never been married, 21.7% were separated or divorced and 1% widowed. No incentive was offered for participation. Subjects included in the study were diagnosed with alcohol-dependence according to DSM-IV-TR criteria (APA, 2000) and were assessed by the use of the Brief Michigan Alcoholism Screening Test (Pokorny, Miller, & Kaplan, 1972) and Alcohol Use Disorders Identification Test (Saunders, Aasland, Babor, Delafuente, & Grant, 1993). Exclusion criteria included a diagnosis of a co-morbid major psychiatric disorder (e.g. Schizophrenia), serious alcohol-related medical complications, organic brain syndrome or heavy sedation. Observer data on alexithymia were only collected for a subsample of 159 patients (111 males and 48 females), with a mean age of 37.60 years (SD = 11.44). To examine test-retest reliability 50 patients completed the TAS-20 at the end of the treatment program (at 3-month follow-up) and observer data were available for 34 patients.

2.2. Measures

The *Toronto Alexithymia Scale (TAS-20)* is a 20-item self-report measure of alexithymia. As noted, the scale has three factors: difficulties identifying feelings (DIF), difficulties describing feelings (DDF) and externally oriented thinking (EOT) (Bagby et al., 1994). Each item is ranked on a 5-point Likert scale and a higher score indicates higher levels of alexithymia. The TAS-20 has shown acceptable validity and reliability in clinical populations (Bagby, Taylor, Quilty, & Parker, 2007; Besharat, 2008).

The *Observer Alexithymia Scale (OAS)* consists of 33 items measuring observer rated alexithymia and can be used by professionals, relatives and friends of the patient being assessed (Haviland, Warren, & Riggs, 2000). Each item is ranked on a 4-point Likert scale and the scale generates a total alexithymia score as well as five factor scores measuring several aspects of alexithymia: Distant (DIS), Uninsightful (UNS), Somatizing (SOM), Humourless (HUM) and Rigid (RI). A higher score indicates more severe observer alexithymia. The scale has yielded acceptable reliability and a stable five factor structure cross-validated in student populations (Berthoz et al., 2005; Haviland et al., 2000; Yao, Yi, Zhu, & Haviland, 2005). Small to moderate correlations with the TAS-20 have been reported in addiction samples (Berthoz et al., 2007; Dorard et al., 2008).

The *Brief Michigan Alcohol Screening Test (bMAST)* is a 10-item self-report measure that was modified from the 25-item MAST and assesses lifetime alcohol problems and alcohol-dependence (Pokorny et al., 1972; Selzer, 1971). The total score ranges from 0-29 and items are answered on a dichotomous scale as either “yes”

or “no”. The bMAST has adequate psychometric properties (Connor, Grier, Feeney, & Young, 2007).

The *Alcohol Use Disorders Identification Test (AUDIT)* is a 10-item instrument designed to measure three different alcohol domains: Alcohol consumption (items 1-3), Alcohol-dependence (items 4-6) and Alcohol-related consequences (items 7-10) (Saunders, et al., 1993). A score of 0-7 suggests low risk drinking, 8-15 hazardous drinking, 16-19 harmful drinking and 20 or higher dependent drinking. The AUDIT has been proposed to be a “gold standard” criterion measure of alcohol problems (e.g., Hodgson, Alwyn, John, Thom, & Smith, 2002) and has sound psychometric properties (see Reinert & Allen, 2007).

2.3. Procedure

Human research ethics approval was granted by the university and hospital ethics committees. Less than 10% of those offered a treatment program declined participation. Prospective participants were given a participant information sheet about the study, and if they wanted to participate were asked to complete a consent form and self-report questionnaires. All participants were detoxified prior to assessment. The participants in this project were assured that it was voluntary and that they could withdraw from participation at any time during the project without comment or penalty. They were also informed that their data would remain confidential and anonymous. In addition, subjects were observed by a Masters or Doctoral level Clinical Psychologist who completed the OAS after the third treatment session. All Clinical Psychologists were trained in the use of the scales with a particular focus on the OAS. We thus assumed that after the third session, the Clinical

Psychologist had enough patient information to make a predictive and valid judgement about alexithymia.

3. Results

3.1. Descriptive Statistics and intercorrelations

The means and standard deviations for the TAS-20, OAS, AUDIT and bMAST are presented in Table 1. Intercorrelations of the TAS-20 scales and OAS-scales are shown in Table 2.

3.2. Reliability Analyses

Cronbach alpha coefficients and test-retest correlations for the TAS-20 and OAS scales are presented in Table 1. Item deletion of the TAS-20 EOT scale did not yield any significant improvement in alpha level. Item homogeneity was assessed by mean inter-item correlations where the values should be between the optimal level of 0.20 to 0.40 and not below 0.10 or above 0.50 (Briggs & Cheek, 1986).

3.3. TAS-20 and OAS in relation to Alcohol Measures

Intercorrelations of the TAS-20 scales, OAS scales, AUDIT scales and the bMAST are shown in Table 3. One hierarchical regression analysis (HRA) was conducted to examine the predictive utility of TAS-20 and OAS in relation to the AUDIT. The OAS subscales were entered as the predictor variables in step 1 and showed that the OAS predicted 9.1% ($R^2 = 0.091$, $p<.039$) of the variance in AUDIT. The TAS subscales were entered in step 2 and accounted for an additional 7.4% (R^2 change = 0.074, $p<.010$) toward AUDIT score (see Table 4). An inspection of the

whole model revealed that DIF (β= .32, p<.003) and the UNI subscale (β= .28, p<.007) were the only significant univariate predictors of the AUDIT.

4. Discussion

The present study evaluated and compared the psychometric properties of the total TAS-20, DIF, DDF, EOT and total OAS, DIS, UNS, SOM, HUM and RI in an alcohol-dependent sample. The present findings suggest that the TAS-20 total mean score was comparable to those found in other alcohol studies (Evren et al., 2008; van Rossum, Laheij, de Doelder, de Jong, & Jansen, 2004). Significant correlations between the total TAS-20 and its subscales DIF, DDF and EOT were evident and consistent with other substance misusing samples (Berthoz et al., 2007; Dorard et al., 2008). The overall mean score of the OAS was higher than mean scores reported in other studies of substance abusers (Berthoz et al., 2007; Dorard et al., 2008). OAS intercorrelations were in partial agreement with recent clinical evidence (Berthoz et al., 2007; Dorard et al., 2008).

The present findings identified a lack of correspondence between the TAS-20 and the OAS in contrast to other studies in addiction and student samples.
More specifically, the correlations between the TAS-TS and all OAS factors in a cannabis dependent sample (Doraard et al., 2008) were in the range of .25 to .41 (p< .05) with the strongest correlation between the TAS-TS and the OAS-TS (.41, p<.001), the DIF and the OAS-TS (.40, p< .001), the UNI scale (.41, p<.001) and the SOM subscale (.27, p< 0.05) as well as the DDF and SOM subscales (.28, p< .05). No significant correlations between the EOT scale and OAS scales were evident. Other research has reported similar patterns in an eating disorder sample and two student samples (Berthoz et al., 2005; 2007; Lumley et al., 2005). One explanation for the

lack of correspondence between the measures may be that the TAS-20 and OAS assess alexithymia based on different conceptualisations.

The TAS-20 was based on the original definition of the alexithymia construct (see Taylor, Bagby & Luminet, 2000) whereas the OAS was based on items from the California Q-set Alexithymia Prototype (CAQ-AP) that was developed by asking 13 professional contributors to the alexithymia literature to describe the typical alexithymic individual (Haviland & Reise, 1996). However, Haviland (2000) proposed that the TAS-20, DIF, DDF and EOT factors might underlie the characteristics and behaviours tapped by the OAS suggesting that some level of correspondence would be expected. This overlap between measures might be related to the UNI and DIS factors of the OAS that assess relationships to feelings similarly to the DIF and DDF subscales.

The internal consistency and scale homogeneity of the TAS-20 scales were acceptable and in accordance with previous substance use studies (Besharat, 2008; Evren et al., 2008). The EOT scale yielded a low Cronbach's alpha (.52) in line with a previous alcohol study (Cleland et al., 2005). However, a low reliability coefficient of the EOT scale may not compromise validity as this scale still has a meaningful content coverage and a low alpha may not be a major impediment to its use (see Schmitt, 1996).

The total OAS and its subscales yielded acceptable internal consistency and scale homogeneity in partial agreement with a cannabis-dependent sample (Dorard et al., 2008). As no previous clinical study has conducted scale homogeneity analyses of the OAS, the present results should be considered preliminary. The present study also examined test-retest correlations that indicated acceptable relative stability for both measures over a 12-week period, further supporting the reliability for the OAS and the

TAS-20. It should also be taken into consideration that any treatment or patient characteristics that moderate change in alexithymia across patients may lead to lower retest coefficients, which may underestimate retest reliability.

The present findings indicated modest relationships between the TAS-20 scales and bMAST as well as with the total AUDIT and AUDIT sub domains. Small to moderate relationships between the TAS-20, DIF, DDF and the MAST has been reported in other alcohol research (Cecero & Holmstrom, 1997; Evren et al., 2008; Uzun, Ates, Cansever, & Ozsahin, 2003). There were significant correlations of the OAS and UNI with the total AUDIT and AUDIT alcohol dependence. The UNI subscale was also significantly associated alcohol-related consequences.

The TAS-20 demonstrated predictive value over and above the OAS regarding alcohol problems. Both the DIF and the UNS scale were univariate predictors of alcohol problems, suggesting that a lack of emotional understanding and difficulties identifying feelings, are the most important aspects of alexithymia in understanding the nature of the relationship between alexithymia and alcohol. The present findings yield some support for the validity of the UNS subscale of the OAS, given that the lack of emotional insight is associated with drinking related problems and dependence severity across observer and self-reports of alexithymia. However, as the TAS-20 and AUDIT shared (self-report) method variance this may have influenced the results supporting the validity of the TAS-20 but not the OAS. Future studies should examine the TAS-20 and OAS in concert with other types of alcohol measures to clarify this issue.

The current findings need to be interpreted in light of several limitations. The Clinical Psychologists who completed the OAS did so after only three sessions with each client, which may not have been sufficient to accumulate “in depth” knowledge

of each participant. As only one Clinical Psychologist rated each client and inter-rater reliability is unknown, and further studies are needed that include several raters to assess inter-rater reliability. Furthermore, research may also need to consider how the TAS-20 and OAS tap into alcohol withdrawal and/or negative affect that are associated with more severe alcohol problems. However, in the present study patients were detoxified prior to assessment, and as such craving may be a more relevant factor to examine in relation to alexithymia if utilising already detoxified participants. In addition, examining sensitivity to treatment (changes in mean scores over time) across alexithymia measures should also be considered in relation to therapeutic change.

In summary, the findings confirmed acceptable internal consistency, test-retest reliability and scale homogeneity for the OAS and TAS-20. Further research is needed to examine the strength of the relationship between the TAS-20 and OAS with alcohol problems and continued use of a multimethod measurement approach appears important given the lack of self-reflection in those with alexithymia (Krystal & Krystal, 1988). Finally, the factorial validity of the OAS and TAS-20 should be examined in concert utilising factor analysis that models method effects.

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Table 1

Descriptive statistics, reliability analysis and test-retest correlations for the TAS-20, OAS, AUDIT and bMAST

	Mean (*SD*)	CA	MIC	T/RT
TAS-TS	53.82 (11.87)	0.84	0.19	0.39**
DIF	19.38 (6.23)	0.85	0.45	0.29*
DDF	14.11 (4.47)	0.75	0.37	0.32*
EOT	20.33 (4.42)	0.52	0.12	0.43**
OAS-TS	43.53 (9.16)	0.84	0.14	0.65**
DIS	17.40 (4.60)	0.89	0.46	0.69**
UNI	11.13 (3.73)	0.78	0.28	0.48**
SOM	3.96 (3.0)	0.82	0.48	0.79**
HUM	7.04 (2.29)	0.71	0.32	0.72**
RIG	4.94 (2.22)	0.78	0.42	0.70**
AUDIT	26.03 (9.80)	0.81	-	-
A-AC	10.03 (3.23)	0.66	-	-
A-AD	5.55 (3.66)	0.77	-	-
A-ARP	10.36 (4.42)	0.58	-	-
bMAST	16.60 (8.27)	0.74	-	-

** $p < 0.01$, * $p < 0.05$. AUDIT=Alcohol Use Identification Test, A-AC=Audit-Alcohol Consumption, A-AD=Audit-Alcohol Dependence, A-ARP=Audit-Alcohol Related Problems; DDF=Difficulties Describing Feelings, DIF=Difficulties Identifying Feelings, DIS=Distant, EOT=Externally Oriented Thinking, HUM=Humorless, OAS-TS=Observer Alexithymia Scale-Total Score, RIG=Rigid, SOM=Somatizing, TAS-TS=Toronto Alexithymia Scale-Total Score, UNI=Uninsightfull.

Table 2 Intercorrelations between the TAS-20 and OAS

	1	2	3	4	5	6	7	8	9	10
1. TAS-TS	-	.83**	.87**	.63**	.09	.07	.22**	-.04	-.02	-.06
2. DIF		-	.63**	.19**	.08	.00	.21*	.04	-.05	.00
3. DDF			-	.43**	.03	.03	.016*	-.08	-.02	-.09
4. EOT				-	.08	.15	.12	-.08	.04	-.07
5. OAS-TS					-	.54**	.67**	.54**	.65**	.49**
6. DIS						-	-.01	-.22**	.58**	-.11
7. UNI							-	.52**	.12	.26**
8. SOM								-	.02	.44**
9. HUM									-	.22**
10. RI										-

* $p < 0.05$, ** $p < 0.01$. DDF=Difficulties Describing Feelings, DIF=Difficulties Identifying Feelings, DIS=Distant, EOT=Externally Oriented Thinking, HUM=Humorless, OAS-TS=Observer Alexithymia Scale-Total Score, RIG=Rigid, SOM=Somatizing, TAS-TS=Toronto Alexithymia Scale-Total Score, UNI=Uninsightfull.

Table 3

Intercorrelations between TAS-20, OAS, AUDIT and bMAST

	AUDIT	A-AC	A-AD	A-ARP	bMAST
TAS-TS	0.25**	0.23**	0.23**	0.23**	0.17*
DIF	0.27**	0.21**	0.22**	0.25**	0.21**
DDF	0.17*	0.20**	0.15*	0.15*	0.12
EOT	0.14	0.14	0.16*	0.12	0.04
OAS-TS	0.17*	0.03	0.20*	0.16	0.09
DIS	0.01	0.05	0.06	-0.05	0.09
UNI	0.27**	0.03	0.28**	0.27**	0.08
SOM	0.05	-0.09	0.05	0.10	-0.01
HUM	0.04	-0.02	0.09	0.03	0.08
RI	0.12	0.10	0.08	0.16	-0.02

** $p < 0.01$, * $p < 0.05$. AUDIT=Alcohol Use Identification Test, A-AC=Audit-Alcohol Consumption, A-AD=Audit-Alcohol Dependence, A-ARP=Audit-Alcohol Related Problems; bMAST=Brief Michigan Alcoholism Screening Test, DDF=Difficulties Describing Feelings, DIF=Difficulties Identifying Feelings, DIS=Distant, EOT=Externally Oriented Thinking, HUM=Humorless, OAS-TS=Observer Alexithymia Scale-Total Score, RIG=Rigid, SOM=Somatizing, TAS-TS=Toronto Alexithymia Scale-Total Score, UNI=Uninsightfull.

Table 4

Hierarchical regression analysis predicting AUDIT.

Entry of predictor variables		B	SE	β	$R^{\nabla 2}$	Test of significance	P
AUDIT							
Step 1:	OAS				.105	F = 2.734, 5/137 df	.022
	DIS	.130	.156	.350			
	UNS	.619	.178	.60			
	SOM	-.490	.255	-.211			
	HUM	-.069	.314	-.024			
	RI	.299	.290	.098			
Step 2	OAS, TAS				.059	F = 3.301, 8/134 df	.002
	DIS	.015	.153	.010			
	UNS	.498	.181	.281			
	SOM	-.447	.252	-.193			
	HUM	.006	.307	.002			
	RI	.294	.282	.097			
	DIF	.343	.112	.316			
	DDF	-.102	.168	-.066			
	EOT	-.067	.140	-.042			

AUDIT=Alcohol Use Disorders Identification Test, DDF=Difficulties Describing Feelings, DIF=Difficulties Identifying Feelings, DIS=Distant, EOT=Externally Oriented Thinking, HUM=Humorless, OAS=Observer Alexithymia Scale, RIG=Rigid, SOM=Somatizing, TAS=Toronto Alexithymia Scale, UNI=Uninsightfull.